SILICON DIFFUSED POWER TRANSISTORS

High-voltage, high-speed, glass-passivated npn power transistors in a TO-220 envelope intended for use in power supplies and deflection circuits for colour receivers and monitors.

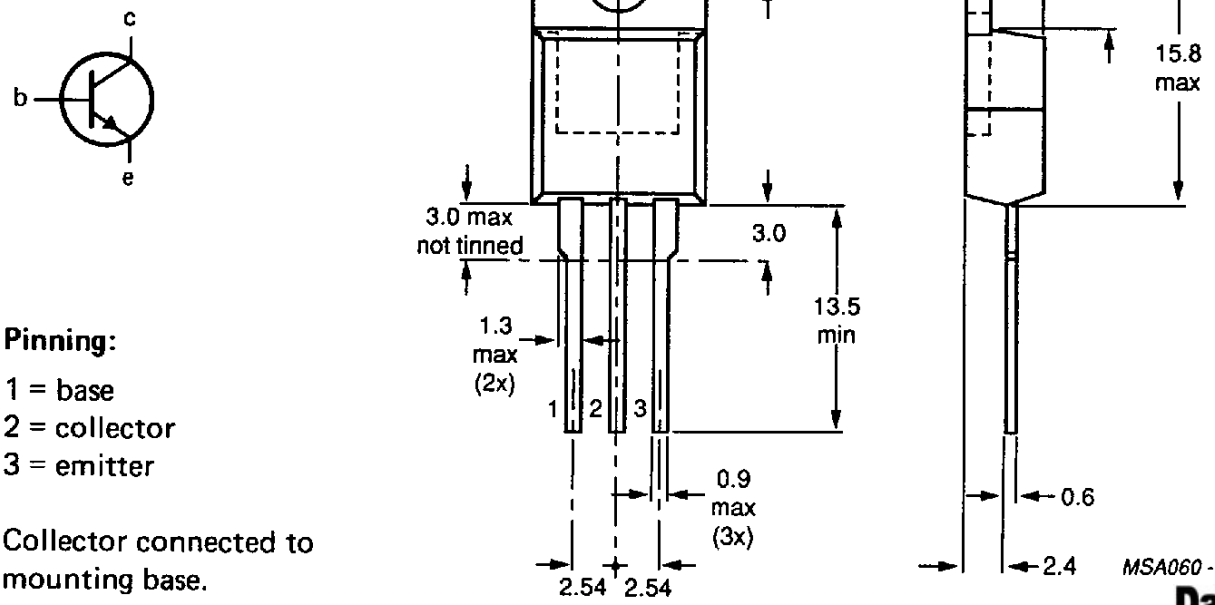
QUICK REFERENCE DATA

Collector-emitter voltage			
peak value; V_{BE} = 0	V_{CESM}	max.	1350 V
open base	V_{CEO}	max.	550 V
Saturation voltages	V_{CEsat}	max.	2.0 V
	V_{BEsat}	max.	1.5 V
Collector current			
saturation	I_{Csat}	max.	2.0 A
DC	I_C	max.	5.0 A
peak value	I_{CM}	max.	8.0 A
Total power dissipation			
up to T_{mb} = 25 °C	P_{tot}	max.	100 W
DC current gain			
I_C = 2.0 A; V_{CE} = 2 V	h_{FE}	min.	6.0
Switching times; resistive load			
fall time	t_f	max.	0.7 μs

MECHANICAL DATA

Dimensions in mm

Fig. 1 TO-220AB.



Pinning:

1 = base
2 = collector
3 = emitter

Collector connected to mounting base.

RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134)

Collector-emitter voltage			
peak value; $V_{BE} = 0$	V_{CESM}	max.	1350 V
open base	V_{CEO}	max.	550 V
Emitter-base voltage	V_{EBO}	min.	6.0 V
Collector current			
DC	I_C	max.	5.0 A
peak value	I_{CM}	max.	8.0 A
Base current			
DC	I_B	max.	2.0 A
peak value	I_{BM}	max.	4.0 A
Emitter current			
DC	I_E	max.	7.0 A
peak value	I_{EM}	max.	12 A
Total power dissipation			
up to $T_{mb} = 25\ ^oC$	P_{tot}	max.	100 W
Storage temperature range	T_{stg}		−65 to + 150 °C
Junction temperature	T_j	max.	150 °C

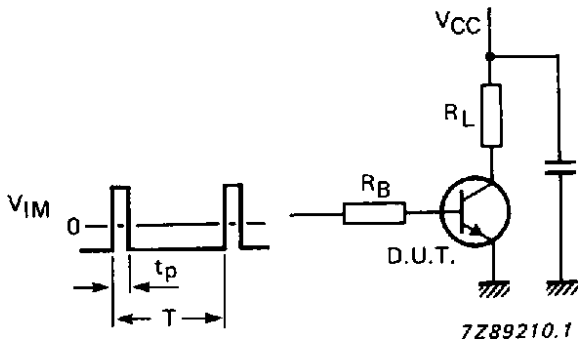
THERMAL RESISTANCE

From junction to mounting base	$R_{th\ j\text{-}mb}$	max.	1.25 K/W

CHARACTERISTICS

T_j = 25 °C unless otherwise specified

Collector cut-off current			
V_{BE} = 0; V_{CE} = V_{CESmax}	I_{CES}	max.	1.0 mA
V_{BE} = 0; V_{CE} = V_{CESmax}; T_j = 125 °C	I_{CES}	max.	2.0 mA
Emitter cut-off current			
I_C = 0; V_{EB} = 6 V	I_{EBO}	max.	1.0 mA
Collector-emitter breakdown voltage			
I_C = 100 mA; I_B = 0	V_{CEO}	min.	550 V
Saturation voltage			
I_C = 2.0 A; I_B = 0.33 A	V_{CEsat}	max.	2.0 V
I_C = 4.0 A; I_B = 1.33 A	V_{CEsat}	max.	3.0 V
DC current gain			
I_C = 10 mA; V_{CE} = 5 V	h_{FE}	min.	6.0
I_C = 1.0 A; V_{CE} = 5 V	h_{FE}	min.	8.0
I_C = 2.0 A; V_{CE} = 2 V	h_{FE}	min.	6.0
I_C = 4.0 A; V_{CE} = 3 V	h_{FE}	min.	3.0
Switching times; resistive load (Figs 2 and 3)			
$I_{C\,on}$ = 2.0 A; $I_{B\,on}$ = $-I_{B\,off}$ = 0.33 A			
turn-on	t_{on}	max.	0.5 μs
turn-off; storage time	t_s	max.	6.0 μs
fall time	t_f	max.	0.7 μs
Switching times; inductive load (Figs 4 and 5)			
$I_{C\,on}$ = 2.0 A; $I_{B\,on}$ = 0.33 A			
turn-off; storage time	t_s	max.	2.5 μs
fall time	t_f	max.	0.8 μs



t_p = 0.01

$\frac{T}{t_p}$ = 20 μs

Fig. 2 Test circuit resistive load; V_{CC} = 250 V; V_{IM} = −6 to + 8 V.

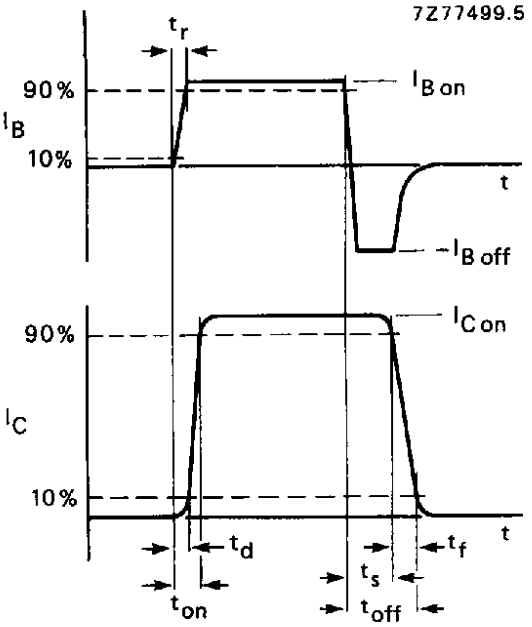
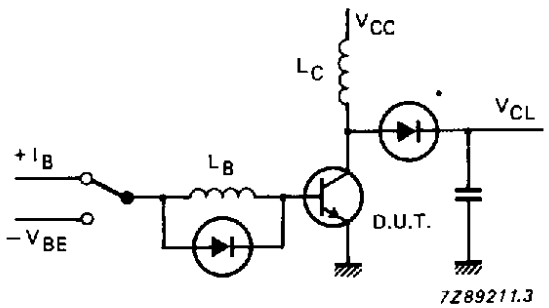


Fig. 3 Switching times waveforms with resistive load; $t_r < 50$ ns.



V_{CL} = 300 V
V_{CC} = 30 V
$-V_{BE}$ = −5 V
L_B = 2.5 μH
L_C = 200 μH

Fig. 4 Test circuit inductive load.

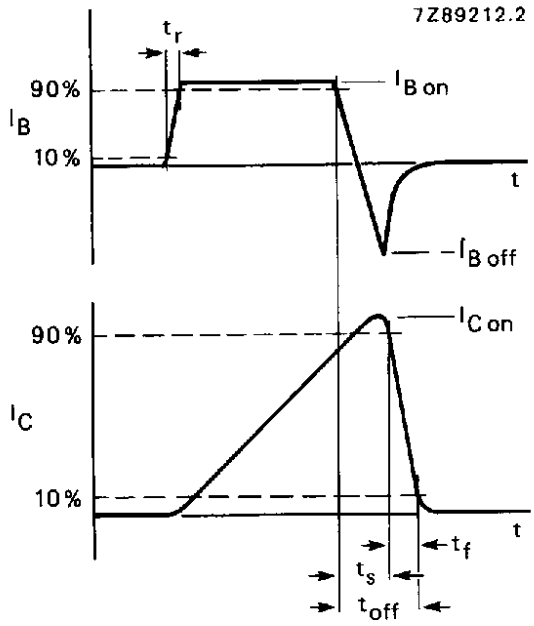


Fig. 5 Switching times waveforms with inductive load.